

Luis Carlos García del Molino

PhD Candidate at Université Paris Diderot

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Date of birth 24 September 1987

Education

MSc. **Erasmus Mundus Masters in Complex Systems Science**, with an **Erasmus Mundus** scholarship.

2010 - 2011 University of Warwick
- M1 Thesis: Zero Range Process with Random Interaction
- Advisor: Ass. Prof. Stefan Grossinsky

2011 - 2012 École Polytechnique de Paris
- M2 Thesis: Transition to Chaos on randomly connected interacting systems with applications to neural networks
- Advisor: Prof. Khashayar Pakdaman

BSc. **Licenciatura en Física**, Universidad de Barcelona, 2009
specialization in Statistical Physics.
2007- 2008 **SICUE** interchange with Universidad Autónoma de Madrid, with a **SENECA** scholarship.

Work and teaching experience

Sep. 12/Dec. 12 **Random Matrix Theory** Teaching assistant for the Erasmus Mundus Masters in Complex Systems, Ecole Polytechnique.

Oct. 09/Jun. 10 Research Assistant, **Laboratory of Magnetism and Low Temperatures, Universitat de Barcelona** under the direction of Dr. J. Tejada.
Laboratory research work in nanomagnetism: Experimental set ups, data mining, results analysis, computer simulation.
Elaboration of course material and a book of analysis of experimental results in magnetism for students of the subject Advanced Solid State Physics.

Sep. 08/Jun. 09 Undergraduate Research Student, **Microfluidics Group, Universitat de Barcelona** under the direction of Dr. A. Hernández-Machado.
Design of an experiment to calculate oscillating flow speed inside microchannels.

Jul. 08/Aug. 08 Internship, **Food & Science Department, Nestlé Research Center** (Lausanne) under the direction of Dr. C. Tedeschi.
Work in an interdisciplinary group with physics, chemist and nutritionist studying the production, characterization and in vitro digestion of monodisperse oil/water emulsions.

Publications

1. L.C. García del Molino, K. Pakdaman, J. Touboul. *The heterogeneous gas with singular interaction: Generalized circular law and heterogeneous renormalized energy*, J. Phys. A: Math. Theor. **48** 045208 (2015).
2. L.C. García del Molino, K. Pakdaman, J. Touboul, G. Wainrib. *Synchronization in random balanced networks*, Phys. Rev. E **88**, 042824 (2013).
3. G. Wainrib, L.C. García del Molino. *Optimal system size for complex dynamics in random neural networks near criticality*, Chaos **23**, 043134 (2013).
4. L.C. García del Molino, P. Chleboun, S. Grossinsky. *Condensation in disordered zero-range processes*, J. Phys. A: Math. Theor. **45** 205001 (2012).

Preprints

1. L.C. García del Molino, K. Pakdaman, J. Touboul, G. Wainrib. *The real Ginibre ensemble with $k = O(n)$ real eigenvalues*, arXiv:1501.03120
2. L.C. García del Molino, K. Pakdaman, J. Touboul. *Real eigenvalues of non-symmetric random matrices: Universality and Transitions*

Talks and posters

1. *The heterogeneous gas with singular interaction* (Poster), Journées de l'Ecole Doctoral Pierre Luis Lions, Saint-Malo, October 2014.
2. *Finite size effects and synchronization in random networks*, Symposium on open issues in experimental and theoretical neuroscience, Paris V, March 2014.
3. *Random matrices in models of neural networks*, Institute Jacques Monod, January 2014.
4. *Dynamics of randomly connected systems*, Santa Fe Institute Complex Systems Summer School, Zapallar, November 2013.
5. *Synchronization in random balanced networks* (Poster), Journées de l'Ecole Doctoral Pierre Luis Lions, Saint-Malo, October 2013. **Price best poster presentation.**
6. *Synchronization in random balanced networks*, Collège de France, June 2013.

Computer skills

Wide experience programming with *C*, *CUDA*, *Python* and *FORTRAN*.
Command of scientific software: *MATLAB*, *Mathematica*, *Gnuplot*.
Proficiency in *bash*.

Languages

Spanish	Mother tongue
Catalan	Mother tongue
English	Fluent, iBT TOEFL 105
French	Fluent, B2 CEFR
Japanese	Intermediate, A2
German	Beginner, A1 CEFR

Other areas of interests

Traveling: India, South America, Eastern Europe, Egypt, Japan and others.

Music: both modern and classical music. I play violin, bandurria and drums. Conductor of *Tuna de Ciències de Barcelona* during the years 2009 and 2010.

Student societies: musical society *Tuna de Ciències de Barcelona* (UB), cultural society *Manuela Malasaña* (UAM), *Planta 8* magazine (UB), musical society *Folk Band* (UoW).

Origami.